Experiential Learning Trading Agricultural Contracts in a Commodity Fund

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INTRODUCTION

- AgEc 484/584, Trading in Agricultural Futures and Options, is a three credit undergraduate and graduate course offered during spring and fall semesters.
- In the class, students propose and execute trades in the POET Student-Managed Agricultural Commodities Fund, the Fund. The trades may include buying and selling futures, put options, call options and combinations of agriculture-related contracts in a margin account.
- The class is an elective commonly taken by agribusiness majors and other agriculture majors. The class is taught by faculty in the Ness School of Management and Economics (NSME) at South Dakota State University (SDSU) and complements our Student Managed Investment Fund (SMIF) class and activity by our Investment Club.
- The general layout follows that of producer clubs such as Jones (1993) and of similar classes, such as Parcell and Franken (2009) and Schoeder, Tierney and Kiser (1995). Unlike the pooled settings, the Fund differs as the equity is owned by the SDSU Foundation, while being directed by the students. The Fund is distinct from Massa and Ramsey (2019), which only invests in exchange traded funds. Bruce and Greene (2014) provides broad overview of SMIF approaches and other ideas.
- The curriculum and Fund characteristics are described here to inform other programs that may want to consider adopting a similar course.

OBJECTIVES

The syllabus outlines the course objectives that are a major focus for what is shared here.

The course builds on student knowledge of fundamental price analysis of agricultural commodity markets and hedging principles.

The goals for this course are:
1. To increase understanding of fundamental and technical analysis of markets;
2. To master the use of trading tools and techniques used for hedging, speculation, arbitrage and diversification in a professional setting; and
3. To gain knowledge of practical trading considerations and implications for hedging effectiveness and Fund performance.

The students will seek to achieve risk-adjusted returns while preserving capital for future students.

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INSTRUCTIONAL METHODS

- The class is taught in the First Dakota National Bank e-Trading Education Lab and currently meets Mondays, Wednesdays and Fridays 11:00-11:50 AM.
- Early in the semester there are lectures reviewing futures, introducing or reinforcing options on futures, aspects of fundamental and technical analysis, and practical trading techniques.
- AgEc 484 students currently use Carter (2018), while AgEc 584 students also use Hull (2016).
- Students analyze a current market report, e.g., *Cattle on Feed*, and share potential trade ideas.
- They use Bloomberg Terminals and may obtain Bloomberg Market Certification. The terminals make it easy to isolate contracts by expiration month to observe seasonal patterns masked when looking at a nearby chart (Figure 1).
- The class takes a deep dive into all aspects of option pricing, volatility and Greeks. As stressed by Purcell and Koontz (1999), "Volatility to the options trader is as important as basis is to the hedger." Volatility surfaces are explored across commodities and through time (Figure 2).
- The students prepare detailed strategy proposals around events or arbitrage ideas.

Figure 1. Seasonal Pattern of Recent June Lean Hog Contracts Until Settlement.

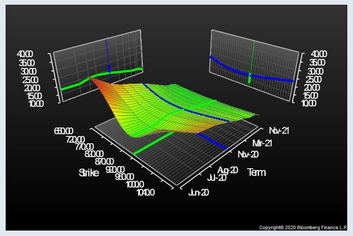

Figure 2. Implied Volatility Surface for Soybeans.

Practice Drills

- Trading drills are used to gain competency in a speculative setting that requires detailed coverage of entry and exit timing and levels and order types.
- In Spring 2020 the students made extensive use of the CME Group website and their Trading Challenge platform.
- Other platforms have included: ThinkorSwim, Commodity Challenge and Interactive Brokers. The instructor interface and ease of use varies across platforms.
- Trading drills reinforce hedging tools and tactics covered in the pre-requisite course, e.g., buying put options.
- Drill feedback levels the disparity in prior knowledge and focuses attention on executing trades.

Platforms with mobile apps increase access and participation.

CLASS TRADES

- Trade proposals gradually become the primary use of class time and may have a fundamental, technical or arbitrage focus.
- Students vetted proposals outside of class using video conferencing, discussion threads, text messaging and phone calls.
- Trades are made following a majority approval by the class and can be adjusted if warranted.
- The instructor enters or orders trades, which are vetted with a full-service introducing broker. The Fund equity is drawn on for commissions and fees and serves as collateral for self-funding margin requirements.
- Trades vary in motivation, scope, risk level and return expectations (Table 1). Typically risk management of futures positions is through stop orders or coverage with options. Futures and options positions generally have a limit order as an exit plan.
- The trades gradually build a portfolio that will consist of futures and options contracts on commodities directly and indirectly related to agriculture.
- Students serve as compliance managers, monitoring trades and investment policy parameters. Students can also serve as sector leads, following SMIF protocols.
- Unlike attending paper-trading drills, there is a psychological difference trading real money.

Table 1. Sample of Trades Executed in Spring 2020.

Contract	Rationale	Entry	Exit	Net
Lean Hogs Futures	Consistent drop after report	Sell at 71.60	LIMIT at 69.60	$800
Soybean Meal Call Option	Indications of increasing demand	Buy at 7.15	Sell at 6.50	($65)
Corn Futures	Reversal in price direction	Buy at 3.4275	STOP at 3.3275	($512.50)
Milk Put Option	Indications of decreasing demand	Buy at 0.35	LIMIT at 1.35	$2,000
Live Cattle Futures Spread	Expect reversion to long-run	Buy Jun-Dec at -9.125	STOP at -11.625	($1,090)

Notes: Contract months were chosen to avoid delivery situations. Rationales varied in scope and depth. Entry points may be close to the market when there is time to place trades during class or pitched with some leeway if placed later. The Exit points were executed, and generally had a counter strategy in the other price direction. The Net figure does not include commissions and fees.

STARTING A FUND

- The Fund was started in 2018 and enhanced in 2019 by generous donor gifts. The donor understood the equity needed to facilitate trades and cover margin exposure.
- SDSU communicated with the Commodity Futures Trading Commission prior to starting. The class functions as an Educational Marketing Club, thus positions must be closed by the end of the semester.
- The Fund is owned by the SDSU Foundation, which opened a corporate account with margin trading. Our broker helped communicate with the clearing firm when setting up the account.

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PERFORMANCE

The Fund has a limited trading horizon (a semester), but some benchmarks are useful. Invesco DB Agriculture Fund (DBA) holds a portfolio of long commodity futures positions. U.S. Treasuries, 4-Week T-Bills, serve as a risk-free rate. The Fund lost 9.1% (after commissions and fees) in Spring 2019, while DBA lost 5.2% and T-Bills returned 0.8% (Figure 3). The Fund gained 0.6% in Spring 2020, while DBA lost 17.1% and T-Bills returned 0.3% (Figure 4).

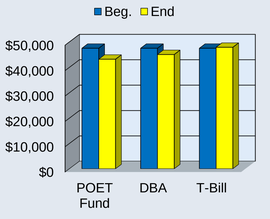

Figure 3. Spring 2019 Performance

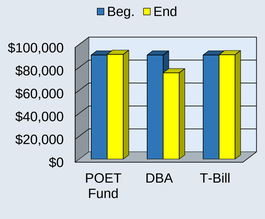

Figure 4. Spring 2020 Performance

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